

**AMENDMENTS TO THE CLAIMS**

This listing of the claims replaces all prior listings and versions:

1. (currently amended): An expression cassette comprising, a polynucleotide encoding luciferase *luxA*, *luxB*, *luxC*, *luxD* and *luxE* gene products arranged in the following relative order 5' - *luxA-luxB-luxC-luxD-luxE* - 3', wherein (a) transcription of the polynucleotide results in a polycistronic RNA encoding all the gene products; (b) each of the *luxA*, *luxB*, *luxC*, *luxD* and *luxE* gene products is expressed as an individual polypeptide; and (c) polynucleotide sequences comprising Gram-positive ribosome-binding site sequences are located 5' to all of said *lux* coding sequences and further wherein the lux gene products are obtained from bacteria having a naturally occurring lux operon ordered luxCDABE.
2. (original): The expression cassette of claim 1, further comprising a multiple-insertion site located 5' to said *luxA*, *luxB*, *luxC*, *luxD* and *luxE* coding sequences.
3. (original): The expression cassette of claim 1, wherein at least one Gram-positive ribosome binding site comprises the sequence presented as SEQ ID NO:1.
4. (original): The expression cassette of claim 1, wherein the coding sequences of the gene products are derived from *Photorhabdus luminescens*.
5. (original): The expression cassette of claim 1, wherein the polynucleotide further comprises a promoter located 5' to all of said *lux* coding sequences wherein transcription of the polynucleotide results in a polycistronic RNA encoding all the *lux* gene products.
6. (currently amended): The expression cassette of claim 5, wherein said promoter is contained in an Expression Enhancing Sequence-selected from the group consisting of Sa1 (SEQ ID NO:15), Sa2 (SEQ ID NO:16), Sa3 (SEQ ID NO:17), Sa4 (SEQ ID NO:18), Sa5 (SEQ ID NO:19), and Sa6 (SEQ ID NO:20).
7. (currently amended): The expression cassette of claim 5, wherein said promoter is contained in an Expression Enhancing Sequence selected from the group consisting of Sp1 (SEQ ID NO:21), Sp5 (SEQ ID NO:22), Sp6 (SEQ ID NO:23), Sp9 (SEQ ID NO:24), Sp16 (SEQ ID NO:25) and Sp17 (SEQ ID NO:26).

8. (currently amended): The expression cassette of claim 7, wherein said promoter is contained in Expression Enhancing Sequence Sp16 (SEQ ID NO:25).

9-20. (canceled).

21. (previously presented): An expression cassette comprising, a polynucleotide encoding luciferase *luxA*, *luxB*, and *luc* gene products, wherein (a) transcription of the polynucleotide results in a polycistronic RNA encoding all three gene products, (b) polynucleotide sequences comprising Gram-positive ribosome-binding site sequences are located adjacent the 5' end of the *luxA* coding sequences, adjacent the 5' end of the *luxB* coding sequences, and adjacent the 5' end of the *luc* coding sequences, and (c) each of the *luxA*, *luxB*, and *luc* gene products is expressed as an individual polypeptide.

22. (original): The expression cassette of claim 21, wherein said polynucleotide further encodes *luxC*, *luxD* and *luxE* gene products, wherein (i) Gram-positive ribosome-binding site sequences are located 5' to each of the *luxC*, *luxD*, and *luxE* coding sequences, and (ii) each of the *luxC*, *luxD*, and *luxE* gene products is expressed as an individual polypeptide.

23. (canceled)

24. (original): The expression cassette of claim 21, wherein the polynucleotide further comprises a promoter located 5' to all of said *lux* and *luc* coding sequences wherein transcription of the polynucleotide results in a polycistronic RNA encoding all the *lux* and *luc* gene products.

25. (currently amended): The expression cassette of claim 24, wherein said promoter is contained in an Expression Enhancing Sequence selected from the group consisting of Sa1 (SEQ ID NO:15), Sa2 (SEQ ID NO:16), Sa3 (SEQ ID NO:17), Sa4 (SEQ ID NO:18), Sa5 (SEQ ID NO:19), and Sa6 (SEQ ID NO:20).

26. (currently amended): The expression cassette of claim 24, wherein said promoter is contained in an Expression Enhancing Sequence selected from the group consisting of Sp1 (SEQ ID NO:21), Sp5 (SEQ ID NO:22), Sp6 (SEQ ID NO:23), Sp9 (SEQ ID NO:24), Sp16 (SEQ ID NO:25) and Sp17 (SEQ ID NO:26).

27. (currently amended): The expression cassette of claim 26, wherein said promoter is contained in Expression Enhancing Sequence Sp16 (SEQ ID NO:25).

28. (previously presented): The expression cassette of claim 22, further comprising a multiple-insertion site located 5' to said *luxA*, *luxB*, *luc*, *luxC*, *luxD* and *luxE* coding sequences.

29. (original): The expression cassette of claim 21, wherein the coding sequences for *luxA* and *luxB* are obtained from *Photorhadus luminescens*.

30-33. (canceled).

34. (original): The expression cassette of claim 1, wherein the expression cassette is contained within a bacterial transposon.

35. (original): The expression cassette of claim 1, wherein the expression cassette is contained within a bacterial mini-transposon.

36. (original): The expression cassette of claim 1, wherein the coding sequences of the gene products comprise codons that are optimal for expression of the gene products in a host system into which the expression cassette is to be introduced.

37-48. (canceled)

49. (original): A shuttle vector comprising:  
an expression cassette according to claim 1;  
a polynucleotide encoding a selectable marker;  
a Gram-positive origin of replication; and  
a Gram-negative origin of replication.

50-55. (canceled)

56. (original): A method of modifying a Gram-positive organism to produce light, comprising transforming the Gram-positive organism with an expression cassette according to claim 1.

57. (canceled)

58. (original) A method of screening an analyte for its ability to affect expression of a reporter marker, comprising:

providing the analyte to Gram-positive bacteria comprising the luciferase expression cassette of claim 1, wherein said reporter marker comprises luciferase; and

monitoring the effect of the analyte on the ability of the Gram-positive bacteria to produce light, thereby identifying whether the analyte affects expression of the reporter in Gram-positive bacteria.

59-63. (canceled)

64. (original) A Gram-positive bacteria comprising an expression cassette according to claim 1.

65-68. (canceled).

69. (previously presented): The expression cassette of claim 22, wherein the arrangement of the coding sequences for the *lux* gene products is in the following relative order 5' - *luxA-luxB-luxC-luxD-luxE* - 3'.

70. (previously presented): The expression cassette of claim 21, wherein the expression cassette is contained within a bacterial transposon.

71. (previously presented): The expression cassette of claim 21, wherein the expression cassette is contained within a bacterial mini-transposon.

72. (previously presented): The expression cassette of claim 21, wherein the coding sequences of the gene products comprise codons that are optimal for expression of the gene products in a host system into which the expression cassette is to be introduced.

73. (previously presented): A shuttle vector comprising:  
an expression cassette according to claim 21;  
a polynucleotide encoding a selectable marker;  
a Gram-positive origin of replication; and  
a Gram-negative origin of replication.

74. (currently amended): A Gram-positive ~~bacteria~~ bacterium comprising an expression cassette according to claim 21.

75. (currently amended): A ~~bacteria~~ bacterium comprising the vector of claim 49.

76. (currently amended): A ~~bacteria~~ bacterium comprising the vector of claim 73.

77. (previously presented): A method of modifying a Gram-positive organism to produce light, comprising transforming the Gram-positive organism with an expression cassette according to claim 21.

78. (previously presented): The method of claim 77 further comprising providing the substrate required for *luc*-mediated luciferase activity.

79. (previously presented): A method of screening an analyte for its ability to affect expression of a reporter marker, comprising:

providing the analyte to Gram-positive bacteria comprising the luciferase expression cassette of claim 21, wherein said reporter marker comprises luciferase;

providing a substrate required for luciferase light production; and

monitoring the effect of the analyte on the ability of the Gram-positive bacteria to produce light, thereby identifying whether the analyte affects expression of the reporter in Gram-positive bacteria.

80. (previously presented): The method of claim 79, wherein said substrate comprises an aldehyde, and said aldehyde is provided as a vapor.

81. (previously presented): The method of claim 79, wherein said substrate is a substrate for the *luc* gene product.

82. (previously presented): The method of claim 79, wherein said substrate comprises (i) an aldehyde, wherein said aldehyde is provided as a vapor, and (ii) a substrate for the *luc* gene product.

83-86. (canceled).